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Measurement in Accounting: Scope and Setting

by

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Discussion Comments

Measurement in Accounting: Scope and Setting

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In the last few years the field of accounting has been the subject of a critical review the intensity of which is increasing as time goes by. Somehow, both within and without the accounting profession, there is a feeling of dissatisfaction with the information generated by the accounting process, although often the criticisms levied cannot be articulated in a constructive fashion. The practitioner seems to have been taking all this turmoil stoically, possibly because he has to respond to specific requirements and constraints, but the academician has been bewildered. So he has been groping for answers and the search still continues.

The topic of this discussion is the "scope" and "setting" of accounting measurements. The three papers presented reflect quite well where the accounting profession stands today. They show that there is an earnest and constructive effort toward a thorough self-study and reorientation. The breadth of coverage, ranging from the very abstract (metaphysical) to the very specific is healthy, but it suggests at the same time that we must intensify our efforts toward developing a comprehensive as well as cohesive theory of accounting measurements. In the absence of such a theory, the

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*The thoughts presented here, no doubt benefited from discussions with colleagues, especially with Professor Thomas M. Hill of MIT and Professor David Solomons of the University of Pennsylvania. None, however, should be held responsible for the outcome.

differences between those who believe that the purpose of accounting is mainly managerial and those who place emphasis on financial reporting become substantive, and may give the impression that the two purposes cannot be reconciled.

Of the three papers only Devine's dealt at length with the theory and scope of measurements. The other two implicitly assumed a scope and addressed themselves to a particular "setting".

Measurements: Utilitarian Means, or Ends?

In an effort to convert accounting into a science, some people turned for answers to the theory of scientific measurements. They thus attempted to develop purer and purer measures as ends in themselves and completely divorced from the decision-making processes that these serve. These efforts Devine considers as fruitless, concluding that "measurement is a process that requires extremely high levels of abstraction" but "fiat" nonetheless.

While we agree with the main thesis of Devine, yet an esoteric approach to measurements may not be completely useless if the research is not exclusively limited to that approach. In order to see where in the scientific spectrum of abstraction accounting measurements lie, let us briefly review the two prevalent theories of ideas that have come to us through the ages, the Socratic-Platonic and the Aristotelian.

Reality according to Plato is a model existing only in the metaphysical world. What we on earth do, is to imitate this ideal model as much as possible. Our mind serves as the reflecting medium to record the image, but it does not record reality itself. In this sense, absolute perfection is unattainable but progress is continuous. The Aristotelian theory of ideas on the other hand, is based on the notion that the ideal of "something"

is in the "thing" itself. In other words, it is nothing more than an abstraction of the observable. Consequently, we view things, classify them, abstract from them common characteristics and arrive at the idea.

We must note here that a pure Platonic theory does not provide any universal criteria of efficiency of measurements, that are readily applicable, because there is no way of knowing what is reality in an a priori sense. Only endurance over time can test validity. In contrast, the Aristotelian theory implies that an abstracted idea is real, if it conveys (recreates) the same classificatory stimulus (image of idea) in the mind of all observers.

Accounting measurements must use both approaches. We can neither fully rely on a theory that does not provide us with a criterion of efficiency in measurements, nor can we afford to limit outselves to the observable (what is) at the exclusion of what should be. The philosophical question of whether concepts can exist without percepts must be viewed in our case, in a teleological setting. This implies that we cannot stop where philosophy does. The latter derives pleasure and aesthetic appreciation from the outcome as an end in itself. In our case we have to go beyond pure intellectual curiosity and define a purpose. We have often heard the expression that accounting is a utilitarian tool. If so, can we reconcile absolute non-empirical purism with this purported utility? Shouldn't we try to find out first what the objectives of accounting measurement are before deciding on the nature of these measurements?

Scope of Accounting Measurements

In deciding what is the purpose of accounting, one cannot exclusively look at what it now professes to do because it may be addressing itself to constraints that should not exist in the first place. In other words, in response to all sorts of forces that are now operating, the accounting system may have adapted itself in order to respond to artificial pressures. If we then attempt to observe what is being done and inductively approach what one may call a universal purpose, we will undoubtedly reflect in the objectives the particularities of the setting and the constraints which are imposed by external factors. Another possible difficulty lies in the fact that we are dealing here with a system which is affected by the very process of being studied. Consequently, the choice of the purpose cannot be attacked purely empirically, but mostly on an a priori basis. Once this is done, then we can design our system to be of service (utilitarian) to that overall purpose.

Devine rightfully argues that accounting is purposive, and that we must "direct our analytical inquiry first to objectives..." One look at the possible objectives of the many users of accounting information, however, convinces him that the task "may be beyond ordinary capabilities." Churchill and Stedry on the other hand, assumed implicitly that the objective of measurements is mainly managerial because they proceeded in describing some of the requirements of such a system for optimum allocation of resources and motivation, without specifically discussing or justifying objectives. This is natural since they are concerned with management science and information systems. Brown finally, although he makes a passing

mention of managerial decisions, is mostly engaged in showing that statistical sampling can cut down the amount of data needed for reporting purposes. Consequently, he bypasses the issue of objectives and only raises it parenthetically in his summary.

It appears that a thorough discussion of objectives is necessary because herein lies the only hope for a unified approach to the problems that beset accounting measurements. If objectives are meaningfully defined then the issue of what type of accounting measurements are necessary, will become an integral part of these objectives.

In attempting to focus on the fundamental objective of accounting measurements one finds it necessary to draw upon a set of propositions. The set listed below includes some propositions that are self-evident but others which may be more appropriately considered as hypotheses. These propositions, which are not independent of each other, are:

1. Accounting measurement is not an end in itself but is aimed toward generating inputs to decisions.

2. The community of interest, because of mutual interdependence, among those using accounting data is much greater than the elements of conflict introduced by differences in the final objectives of the users.

3. The most vital factor which affects the realization of the objectives of most users of accounting data, is the efficiency of managerial decisions in the process of allocation of resources.

4. Raw data can perform a multiplicity of purposes.

5. To serve as inputs to decision, data must go through a process of transformation. The latter consequently specializes data and converts them into information.

(a) The closer to the raw stage, the broader the applicability of data.

(b) The operation performed on data which transforms them to inputs to decisions, is particular to the decision itself.

(c) Subjectivity enters through the process of transformation.

(d) The process of transformation is hierarchical. Hence other things equal, the greater the number of transformations performed on data to obtain information, the greater the specialization and subjectivity introduced into the output.

The above propositions imply that the objective of accounting measurements is to be of service to managerial decision making. The data used for internal purposes--before the transformations take place--may also be used for external reporting, since the specialization occurs in the process of transformation. The informational content of these data, however, will be characteristic of the particular transformation applied by the individual.

Our present troubles with external reporting exist because we have imposed an impossible task on accounting measurements. We expect the latter not only to provide data, but to make the decisions for each and every individual no matter what the objectives of the individuals are. As we have seen, in order to make a decision one needs in addition to the raw data a transformation function which is determined by the decision-making process itself. No one can legitimately expect the accounting process to provide digested information and make the decision for each and every external user. General-purpose data, however, amenable to manipulation must be provided.

For internal purposes, in addition to providing raw data we must also provide the transformation function for two main reasons:

(1) In order to provide cause and effect information for motivating efficient behavior, and

(2) To introduce consistency between the objectives of the various operating levels within the firm. Consensus is thus achieved through constraints.[1]

To summarize then, it appears that the scope of accounting measurements should be to provide information (data plus transformation functions) for internal to the firm purposes and general purpose data for external users. It is up to the latter to operate on the data provided, by applying their own subjective transformation functions depending on the decisions they have to make.

Accounting Data: Completeness[2] or Objectivity?

To the extent that subjectivity enters in the process of transformation, one wonders whether the real issue is not one of completeness rather than objectivity, and that a lot of our present arguments may not be misplaced. Given "complete" data or raw inputs within their context, the external user can determine for himself which data are useful and for what decisions.[3] Actually the real issue even with subjective information is not so much that it is not objective but that it is incomplete. If the user is provided with the transformation function used by management he can easily obtain "objective" data if he is "informed".[4]

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[1] For a challenging discussion related to this point see Simon [1].

[2] This term was coined by Professor David Solomons when I expressed to him my thoughts on this topic.

[3] The use of explanatory notes accompanying the financial statements may be aimed at this purpose.

[4] The uniformed user will under either case become the victim of many misconceptions so there is little excuse using him as a model.

The notion of completeness is not free of operational problems either. Always there will be the conflict between extreme detail (chaos) versus order through aggregation. This latter problem, however, will probably prove to be much simpler than the one introduced by the definition of "objectivity".

Accounting Measurements: Setting

We have so far argued together with Devine that accounting is not a science that can be viewed as an end in itself, although it derives from science and can be based on fundamental scientific notions. If we accept this premise, then accounting must be viewed as a utilitarian tool, dependent on the purpose of its being, which together with Churchill and Stedry we view as managerial decision making and motivation for efficient allocation of resources. But now one may ask why do we see this present day unhappiness with the performance of accounting measurements. Is it because the objectives of measurement have changed over time, or is it because the setting within which objectives are carried out is now different?

The objectives of managerial decisions and hence of measurements--as we have postulated--have not really changed over time. What has changed is the environment or setting within which these are pursued.[5] In the early days of accounting measurements, the relative simplicity of the setting did not necessitate elaborate information systems for planning and control as we have previously pointed out. Technology was simple and complementarities

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[5]Churchill and Stedry imply that the objectives of measurements have changed. It appears from their description of setting, however, with which we agree, that differences between our and their views may be due to semantics.

of resources at any moment of time and over time were essentially absent. Because of this, complicated transformations of data were unnecessary, decisions were rather simple and of short-range nature, and the notion of a "going concern" relatively unimportant. The value of resources in use was almost identical to value in exchange, hence stewardship accounting was necessary for fraud prevention. In response to this original setting, therefore, accounting measurements developed, and ever since substituted in our opinion that particular setting for a fundamental goal.

Today, we find more and more that the mere possession of resources is not sufficient, although necessary, for wealth generation. The probability that a firm may fail because of poor decision making is much much greater than the probability that a firm will fail because the employees have defrauded the firm. And this because technology makes most of the parts of the enterprise valueless out of context. No firm today with its complicated technology can sell its net assets piece by piece and obtain the total value that the firm claims in the stock market. Again the reason being that it is the technology in the process of combination of resources that generates value, and not the mere possession of these resources. But as technology continuously changes this setting and points out that the real focus of accounting measurements is the decision-making process, the tighter accounting seems to cling to the original setting.

If we then conclude that the goals of the firm have not changed, but the setting has changed, then accounting must address itself to the new setting and provide information for managerial decision making. Viewing the purpose of accounting in this context we will then realize that it is

useless to attempt to improve the techniques of measurement if the "thing" being measured is of doubtful usefulness, as an input to decisions.

Accounting information, as viewed above in the present setting serves to condition prior expectations. It is another step toward the determination of a sampling distribution of cause and effect. Consequently, we must determine how the information is used as inputs to decision making and how sensitive are the decisions to measurement purity. With all this discussion on purity we must stop and ask: Is accounting in effect barking often at the wrong tree? What is more important to us, the green versus the red color at a traffic light or the hue of the red and green light itself? What in effect we are stating here is the following: If we accept accounting as a utilitarian tool then:

(1) We have to find out in what decisions accounting data are used and should be used, in order to determine whether we want to allow the individual to use his own transformation function or whether we want to give him a signal for motivating him in the direction that we want.

(2)Given that we find out the general characteristics of decisions to which accounting data serve as inputs (by conditioning expectations) then we have to ask how are these used and how should they be used

(3) After finding out how they must be used, then we must determine how sensitive are the decisions to the measurement process. We must find what motivates efficient decisions and what combination between <u>signal</u> and <u>detail</u> is best for this purpose. We live in a non-deterministic world so we must realize that absolute purity cannot be obtained. We know that income streams, operations, decisions, etc., are interrelated, both at any moment of time and over time. Consequently, an obsession for refinements may not be warranted.

The focus on managerial decision making will necessitate the derivation of cause and effect relationships as Churchill and Stedry point out and as we also have pointed out previously [2, 4] . Information about cause and effect is necessary in order to enable the decision maker to abstract relationships, or construct models if you please, and use information sequentially to check on these relationships and learn to make better decisions in the future. Unless we provide the manager with information which is addressed to this cause and effect and help him derive better and better relationships between inputs and outputs, we cannot hope to influence his behavior because the premises for a feedback control system for motivation will not be there in the absence of these relationships. This latter type of an accounting system which provides information on cause and effect and on an a posteri basis analyzes the results of operations in order to find out how consistent these are with the postulated prior functional relationships, we have elsewhere called a functional accounting[6] system [4].

Quantitative rules of effectiveness of accounting measurements and internal controls will no doubt exist. These quantitative rules, however, will refer to the sensitivity of managerial decisions to such quantitative indices. What in effect we are saying here, is that although in many situations the signal will be the important thing and not the particular refinement of the measure, yet in order to determine what is important and what is not for focusing attention by turning on the signal, one must decide where the cut-off point is. This quantitative exactness, however, will no

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[6]This term was chosen to show that accounting systems must be purposive and adaptable and must also provide cause and effect relationships in the form of mathematical functions.

longer be related to an a priori measurement purity but will refer to the sensitivity of managerial decisions. In one case where the decision is very sensitive to small errors, our measures will have to be refined in order to be of any value. In other cases, however, where the quantitative magnitude of the indicator which is necessary for motivating efficient behavior is a multiple of the measurement error, refinements in measurements will not be attempted.

Brown was mostly concerned with the process of data aggregation but unfortunately he set his goals too low. Instead of applying his tools to decisions he limited himself to the process of data reduction, the validity of which he humbly questions in his summary. The latter, incidentally, does ask the right questions. Churchill and Stedry presented a very good description of the setting within which present and future managerial decisions should be made. Their example, which shows the difference between data requirements for planning versus data for short-run control, is revealing, but their criticism of the usefulness of data generated by accounting systems for manufacturing operations refers more to the probable uses that are presently being made of the data than to their potential usefulness. For example, while it is true that average costs when price ratios change are not useful for planning outputs and capacity utilization, this does not necessarily imply that the accounting system for some fundamental reason dictates that they be used, nor that these costs are not useful in the general planning activity. In fact, how else can one plan on a priori basis and analyze the results a posteriori? Furthermore,

while a standard cost system, let us say, will question shifts from the original plan it will not necessarily impute inefficiency, unless directed to do so.

Of course at this stage one may remind us of the legal obligations of accounting reporting. The cycle of those external reports is much longer than that of many business decisions. Consequently we believe that we can have legal reporting as a by-product of a managerial accounting system. It will be a matter of providing "complete" data without any transformation applied on them, except possibly simple aggregation.

Management on the other hand, needs continuous information, so it does not make any sense to let the legal constraints interfere with our attention to the managerial needs. If the firm fails due to poor decisions, it will not take more than a few words to write its epitaph.

To summarize, it appears that the scope of accounting measurements did not really change. It is the setting that has changed. The real trouble comes because the early accountant confused the setting for the scope, but the confusion did not become apparent until the setting has changed drastically. The object of accounting measurements in our estimation has been always the managerial decision-making process. Consequently if we concentrate on accounting for business decisions, then we must provide information for checking on cause and effect. This accounting system, which we termed functional, will view the operations of the firm as non-deterministic and as a part of an experimental setting requiring short-run validation and continuous long-run improvement through learning.

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